

09/214875

414 Rec'd PCT/PTO 14 JAN 1999

PATENT

02581-P0045A WJS/WWW

International Application No.	PCT/DE97/01552
International Filing Date	July 22, 1997
Priority Date Claimed	July 22, 1996
Title of Application	Trocar Sleeve For Endoscopic Applications
Applicant	Hubert Manhes

Box PCT
Assistant Commissioner for Patents
Washington, DC 20231

Attention: EO/US

**TRANSMITTAL LETTER TO THE UNITED STATES
ELECTED OFFICE (EO/US)
(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)**

1. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. 371:

- ☒ This express request to immediately begin national examination procedures (35 U.S.C. 37(f)).
- ☒ The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees (37 CFR 1.492) as indicated below:

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January 14, 1999


Morgen Dieringer

NOTE: Documents and fees must be clearly identified as a submission to enter the National Stage under 35 USC 371 otherwise the submission will be considered as being made under 35 USC 111.37 CFR 1.494(f).

2. Fees:

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
<input checked="" type="checkbox"/> ¹	TOTAL CLAIMS	14 - 20 =	0	x \$18.00 =	\$ 0.00
	INDEPENDENT CLAIMS	2 - 3 =	0	x \$78 =	0.00
	MULTIPLE DEPENDENT CLAIMS (if applicable) x \$260				0.00
BASIC FEE	<input type="checkbox"/> U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO:				
	<input type="checkbox"/> and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 CFR 1.492(a)(4))				\$ 96.00
	<input type="checkbox"/> and the above requirements are not met (37 CFR 1.492(a)(1))				\$ 670.00
	<input checked="" type="checkbox"/> U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY: Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in §1.445(a)(2) to the U.S. PTO:				
	<input type="checkbox"/> has been paid (37 CFR 1.481(a)(2))				\$ 760.00
	<input type="checkbox"/> has not been paid (37 CFR 1.492(a)(3))				\$970.00
	<input checked="" type="checkbox"/> Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 CFR 1.492(a)(5))				\$ 840.00
	TOTAL OF ABOVE CALCULATIONS =				840.00
SMALL ENTITY	Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed also (note 37 CFR 1.9, 1.27, 1.28)				0.00
	Subtotal				840.00
	Fee for recording the enclosed Assignment \$40.00 (37 CFR 1.21(h)) (see Item 13 below). See attached Assignment Cover Sheet.				0.00
TOTAL	Total Fees enclosed				\$840.00

☒ A check in the amount of \$840.00 is enclosed.

☐ Please charge Account No. 19-4516 in the amount of \$*.00.

3. A copy of the International Application as filed is enclosed (35 U.S.C. 371 (c)(2)).

NOTE: Section 4.495(b) was amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment. "The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the international Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date."

- ☐ is transmitted herewith.
☐ is not required as the application was filed with the United States Receiving Office.
☒ has been transmitted:

☒ by the International Bureau. The date of mailing of the application (from form PCT/IB/308): January 29, 1998
☐ by applicant on ---.

4. A translation of the International application into the English language (35 U.S.C. 371 (c)(2)):

- ☐ is transmitted herewith.
☒ is not required as the application was filed in English.
☐ was previously transmitted by applicant on ---.
☐ will follow.

5. Amendment to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)):

NOTE: The Notice of January 7, 1993 points out that 37 CFR § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 Amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendment. Applicant may submit that subject matter in a preliminary amendment filed under Section 1.121. In many cases, filing an amendment under Section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.

- ☐ is transmitted herewith.
☐ has been transmitted:

☐ by the International Bureau. The date of mailing of the amendment (from form PCT/IB/308): ---.
☐ by applicant on ---.
☒ has not been transmitted as:

☒ applicant chose not to make amendment under PCT Article 19. The date of the Mailing of the Search Report (from form PCT/ISA/210):--.
☐ the time limit for the submission of amendments has not yet expired. The amendment or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.

6. A translation of the amendment to the claims under PCT Article 19 (38 U.S.C. 371(c)(3)):

- ☐ is transmitted herewith.
☐ is not required as the amendments were made in English.
☒ was not transmitted for reasons indicated at point 5 above.
☐ will follow.

7. A copy of the international examination report (PCT/IPEA/409):

- ☒ is transmitted herewith.
☐ is not required as the application was filed with the United States Receiving Office.

8. Annex(es) to the International Preliminary Examination Report:

- ☐ is/are transmitted herewith.
☐ is/are not required as the application was filed with the United States Receiving Office.

9. A translation of the annexes to the International Preliminary Examination Report:

- ☐ is transmitted herewith.
☐ is not required as the application was filed with the United States Receiving Office.

10. An oath or declaration of the inventor (35 U.S.C.(c)(4)) complying with 35 U.S.C.. 115:

- ☐ was previously submitted by applicant on ---.
☐ is submitted herewith, and such oath or declaration:

☐ is attached to the application.
☐ identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3b or 3c and 5b; and states that they were reviewed by the inventor as required by 37 CFR 1.70.
☒ will follow.

11. An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):

- ☒ is transmitted herewith.
☐ has been transmitted by the International Bureau. The date of mailing from form PCT/IB/308): ---.
☐ is not required, as the application was searched by the United States International Searching Authority.
☐ will be transmitted promptly upon request.
☐ has been submitted by applicant on ---.

12. An Information Disclosure Statement under 37 CFR 1.97 and 1.98:

- ☐ is transmitted herewith. Also transmitted herewith is/are:
- ☐ Form PTO-1449.
☐ Copies of the citations listed.
- ☒ will be transmitted within three months of the date of submission of requirements under 35 U.S.C. 371(c).
☐ was previously submitted by applicant on ---.

13. Additional Documents being transmitted:

- ☒ Copy of Request (PCT/RO/101).
☒ International Publication No WO 98/03121.
☐ Specification, claims and drawings
☒ Front page only.
☒ Preliminary Amendment (37 CFR §1.121).

14. An Assignment document:

- ☐ is transmitted herewith for recording. A separate Cover Sheet for Assignment Accompanying New Patent Application is attached.
☒ will follow.

Please mail the recorded Assignment document to the person whose signature and address appear below.

15. The above-checked items are being transmitted:

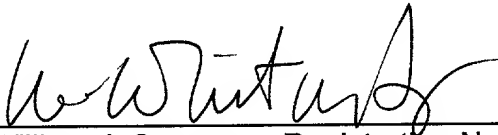
- ☒ before 30 months from any claimed priority date.
☐ after 30 months.

Authorization to Charge Additional Fees

The Commissioner is hereby authorized to charge **any** additional fees, including, but not limited to 37 CFR 1.492(a)(1),(2),(3)&(4) (filing fees) and 37 CFR 1.492(b),(c),(d) (presentation of extra claims) by this paper and during the entire pendency of the Application to Account No. 19-4516.

Respectfully submitted,

January 14, 1999



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PATENT
02581-P0045A WJS/WWW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	Hubert Manhes
Serial No. – Pending	Filing Date: January <u>14</u> , 1999
Title of Application	Trocar Sleeve For Endoscopic Applications
Group Art Unit	Examiner

Assistant Commissioner for Patents
Washington, DC 20231Preliminary Amendment

Dear Sir:

Kindly enter this preliminary amendment before calculating the filing fee for this case.

In The Claims

Please delete claims 1 to 8. Please add the following claims 9 to 15.

9. Trocar sleeve for endoscopic applications, comprising
- an elongate part including at least one passage for insertion of an instrument,
 - pivotable parts formed at a distal section of the trocar sleeve by several longitudinal portions articulated on a proximal section of the trocar sleeve, and
 - a mechanism for pivoting the individual longitudinal portions about an axis orthogonal to a longitudinal axis of the trocar sleeve.

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Morger Dieringer

10. Trocar sleeve according to Claim 9, characterized in that upon insertion of the trocar sleeve into a body cavity said longitudinal portions can be tilted outward away from the longitudinal axis.

11. Trocar sleeve according to Claim 9, characterized in that said longitudinal portions are adapted to bear against an internal wall of a body cavity into which the trocar sleeve is inserted.

12. Trocar sleeve according to Claim 9, characterized in that said longitudinal portions are configured in the manner of wings.

13. Trocar sleeve according to Claim 9, characterized in that the mechanism comprises spring elements acting upon the individual longitudinal portions to bias them in a direction towards a proximal end of the sleeve.

14. Trocar sleeve according to Claim 9, characterized in that a flange is provided on a proximal end of the trocar sleeve, by which the trocar sleeve bears against an outer wall of a body cavity.

15. Trocar sleeve according to Claim 14, characterized in that said flange is adjustable in a direction toward the longitudinal axis of the trocar.

16. Trocar sleeve for endoscopic applications, comprising

- an elongate part including at least one passage for insertion of an instrument,
- pivotable parts formed at a distal section of the trocar sleeve by several longitudinal portions articulated on a proximal section of the trocar sleeve, and
- a mechanism for pivoting the individual longitudinal portions about an axis orthogonal to the longitudinal axis of the trocar sleeve,

- said longitudinal portions adapted to be tilted forward in such a way that they form a tip which permits piercing of the body wall.

17. Trocar sleeve according to Claim 16, characterized in that upon insertion of the trocar sleeve into a body cavity said longitudinal portions can be tilted outward away from the longitudinal axis.

18. Trocar sleeve according to Claim 16, characterized in that said longitudinal portions are adapted to bear against an internal wall of a body cavity into which the trocar sleeve is inserted.

19. Trocar sleeve according to Claim 16, characterized in that said longitudinal portions are configured in the manner of wings.

20. Trocar sleeve according to Claim 16, characterized in that the mechanism comprises spring elements acting upon the individual longitudinal portions to bias them in a direction towards a proximal end of the sleeve.

21. Trocar sleeve according to Claim 16, characterized in that a flange is provided on a proximal end of the trocar sleeve, by which the trocar sleeve bears against an outer wall of a body cavity.

22. Trocar sleeve according to Claim 21, characterized in that said flange is adjustable in a direction toward the longitudinal axis of the trocar.

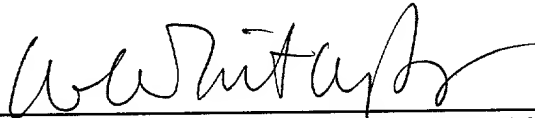
Page 4
Serial No. - Pending
Applicant: Hubert Manhes

REMARKS

The new claims are substantially the same as those in the application as filed.

The amendments eliminate multiple dependencies and alternative expressions, correct antecedent basis, eliminate unnecessary limitations, and otherwise conform the claims to U.S. Practice.

Respectfully submitted,



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Trocar Sleeve for Endoscopic Applications

DESCRIPTION

Field of the invention

The present invention relates to a trocar sleeve for endoscopic applications in accordance with the introductory clause of Patent Claim 1.

Prior art

Typical trocar sleeves comprise a cylindrical section with at least one passage for insertion of an instrument such as a trocar mandrel, an endoscope, scissors or the like. The majority of the trocar sleeves presently available in the market has a length which exceeds the thickness of the wall of the body cavity substantially, such as the abdominal wall through which the trocar or the trocar sleeve is introduced into the interior of the body. One of the reasons is the fact that a trocar which is too short can neither be well seized nor guided in introduction in practice. Thus the cylindrical tubular section of the trocar sleeve restricts that part of the body cavity which is accessible with a flexible instrument or with an instrument having a diameter smaller than the trocar passage diameter.

This disadvantage exists also in the trocar sleeve known from the German Patent DE 43 07 228 A1 - from which the wording of the introductory clause of Patent Claim 1 starts out:

This trocar sleeve consists of two sleeves whereof the outer one is provided with mobile pivotable parts such as segments, platelets, rods, etc. The inner sleeve, by contrast, has a rigid configuration of the kind of known trocars.

Corresponding statements apply also to the trocar sleeve known from the German utility model DE 81 16 373 U1 which comprises terminal sections that may be spread apart but not pivoted.

Brief description of the invention

The present invention is based on the problem of providing a trocar sleeve which, during the operation of introduction into a body cavity, presents a length so long that it is suitable for handling it in an ergonomic and safe way while, upon introduction into the body cavity, it does yet not obstruct the operation in the body cavity by projecting too far into the body cavity.

Another problem underlying the invention is the provision of a trocar sleeve which can be introduced into a body cavity, e.g. by penetration of the abdominal wall, without the need to use a trocar mandrel.

Inventive solutions to the problem are supported by the common basic idea that longitudinal portions pivotable about an axis orthogonal on the longitudinal axis of the trocar sleeve form the distal section of the trocar sleeve. When after introduction of the trocar sleeve into the body cavity the longitudinal sections are pivoted outward the effective length of the trocar sleeve is reduced. Hence a flexible or bendable instrument can reach a larger part of the body cavity than would be possible with a conventional trocar sleeve which projects into the body cavity over a comparatively long distance. The maneuverability of the trocar sleeve is yet unrestricted when the body wall, e.g. the abdominal wall, is pierced through because the trocar or the trocar sleeve, respectively, has a length permitting convenient seizing.

As has been set out above the solution defined in Claim 1 provides a trocar sleeve which is split in its distal terminal section in the longitudinal direction so that it

consists of several longitudinal sections. The individual longitudinal sections can be tilted outward in a direction towards the proximal end upon introduction of the trocar sleeves. Hence the opening cone, which is released by the passage(s) of the trocar sleeve for flexible or bendable instruments, respectively, can be substantially widened, compared against conventional trocar sleeves. Even if instruments with a diameter definitely smaller than the diameter of the passage are passed through the passage in an „oblique“ position a substantially larger space can be „operated on“.

The outwardly pivotable longitudinal sections can be used not only for an enlargement of the space accessible to instruments in the body cavity but also for fastening or fixing the trocar sleeve at the wall of the body cavity, e.g. the abdominal wall.

To this end the longitudinal sections are adapted for bearing against the internal wall of the body cavity into which the trocar sleeve is inserted. It is a particular advantage when the longitudinal sections are configured in the way of wings because in such a case the longitudinal sections adhere against a large area on the body wall.

The basic inventive idea of splitting the distal section of the trocar sleeve in the longitudinal direction and to configure the individual longitudinal sections for pivoting is useful not only for enlarging the achievable „opening cone“ but also for configuring the longitudinal sections for forward tilting in such a way that they form a tip (Claim 9). It might be necessary to provide the individual sections with a blade or a tip, respectively, so that also the conically forward-tilted longitudinal sections have a common tip as well. In this way it is possible to dispense with the pointed trocar mandrel and to „push“ the trocar sleeve through the body wall directly without an additional mandrel on account of the trocar tip.

In another embodiment a flange is provided on the proximal end of the trocar sleeve, by which the trocar sleeve bears against the outer wall of the body cavity. The trocar sleeve can hence be fastened on the body wall in the manner of „tongs

handles" whilst it is supported from inside by the wings or the outwards tilted longitudinal sections.

It is preferred to have a handle adjustable in the longitudinal direction because in such a case the body wall can be „clamped“ between the flange and the swing-out longitudinal sections.

The mechanism which serves to tilt the longitudinal sections inward and/or outward can be realised in the most different ways:

It is possible, for instance, to provide transmission elements such as wire controls, rods, etc. for managing the tilting manoeuvre. A particularly simple solution is defined in Claim 6: in accordance with this solution the mechanism includes spring elements which bias the individual longitudinal sections in a direction towards the proximal end. In their „inoperative position“ or resting position the longitudinal sections are tilted inward so as to form the tip defined in Claim 2. Upon piercing through the body wall an instrument such as an endoscope is introduced. By this action the longitudinal sections are forcibly pivoted outward. As soon as the position of the longitudinal sections exceeds a certain angle the spring action causes the longitudinal sections to rotate outward so that they can bear against the inside of the body cavity, e.g. the inside of the abdominal wall, in particular.

For withdrawal of the trocar sleeve from the body cavity the bearing support of the longitudinal sections against the inside of the body cavity causes the sections to pivot forward so that the trocar sleeve can be removed without any problems. The instrument may remain in the passage of the trocar sleeve during this operation.

The inventive trocar can practically employed in all fields of endoscopy, e.g. in coelioscopy or laparoscopy and even in engineering applications.

Brief description of the drawing

The following is an exemplary description of the invention without any restriction of the general inventive idea, with reference to the drawing which is explicitly

referenced in all other respects as far as the disclosure of all inventive details is concerned which are not explained in more details in the text. In the drawing:

Fig. 1 is a longitudinal sectional view taken through an inventive trocar sleeve, and

Fig. 2 shows a conventional trocar sleeve.

Description of an embodiment

Fig. 1 shows an inventive trocar sleeve 1. The trocar sleeve is split in the longitudinal direction in its distal terminal section so that it consists of several – in the illustrated embodiment – four – longitudinal sections of which Fig. 1 represents only the longitudinal portions 11 and 12. However, also two, three or more, e.g. five, longitudinal sections are conceivable and possible.

The longitudinal portions 11, 12 ... are articulated at a cylindrical central portion 2 of the trocar sleeve 1 by means of joints 6 for pivoting whilst they can be pivoted via appropriate actuating elements from the proximal end or by means of a spring action.

It is possible, for instance, that spring elements in the joints 6 act upon the individual longitudinal portions 11, 12, ... to bias them in a direction toward the proximal end. The longitudinal sections are normally tilted inward so as to form the tip illustrated by the continuous lines. During insertion of the trocar 1 it is hence possible to dispense with a trocar mandrel for piercing through the body cavity such as the abdominal wall 3.

Upon insertion of the trocar sleeve 1 the individual longitudinal portions (11, 12) are tilted outward until they bear against the internal wall of the abdominal wall 3. This is illustrated in Fig. 1 by dashed lines. The pivoting movement is symbolically indicated by dashed lines.

In the event of application of spring-biased joints 6 it is possible, for instance to insert an instrument such as an endoscope upon piercing of the body wall. As a result, the longitudinal sections are forcibly tilted outward. As soon as the position of

the longitudinal sections exceeds a certain angle the spring action causes the longitudinal sections to tilt outward and to bear against the inside of the body cavity.

A flange 4 is provided on the proximal end of the trocar sleeve 1, by which the trocar sleeve 1 bears against the outer wall of the abdominal wall for fixing the trocar by "clamping" the abdominal wall between the flange 4 and the longitudinal portions 11, 12 ... To this end the flange 4 may be adjustable in the longitudinal direction along the central portion 2.

For withdrawal of the trocar sleeve from the body cavity the longitudinal portions 11, 12, ..., on account of their bearing against the inside of the abdominal wall 3, are caused to pivot forward so that the trocar sleeve may be withdrawn without any problems.

The chain-dot lines illustrate the space 5 which is accessible for an instrument – which is not shown here.

For comparison, Fig. 2 shows the space 5 which is accessible with a conventional trocar 1 - which merely consists of a long tubular section 2'. As is apparent from a comparison of the Figures, the inventive trocar renders a substantially wider space accessible. Moreover, a separate trocar mandrel can be dispensed with.

It is possible, for instance, to control the longitudinal portions 11, 12, ... by cable controls, lever joints or by an operating mechanism suitable for insertion into the trocar passage, rather than by spring-biased joints 6.

PATENT CLAIMS

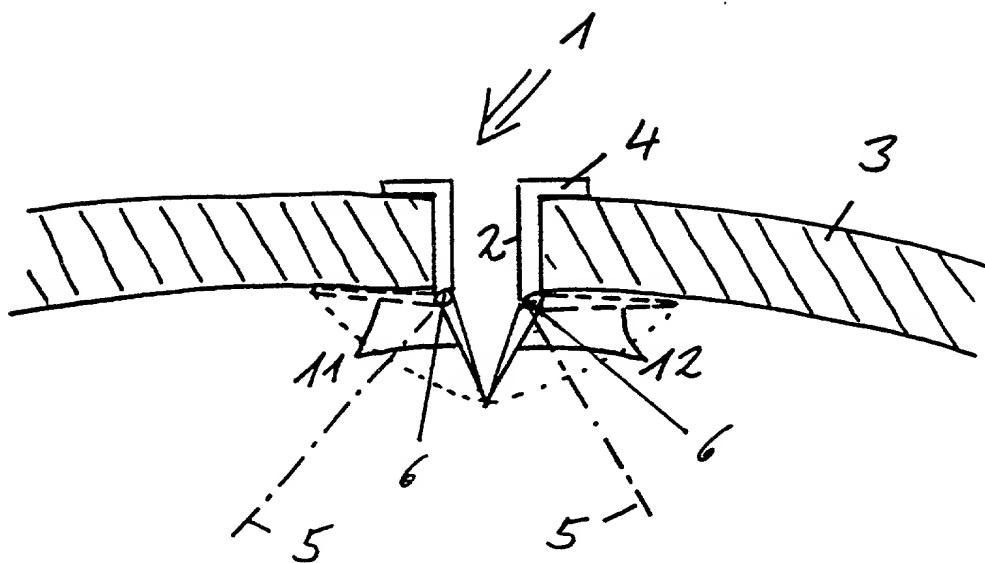
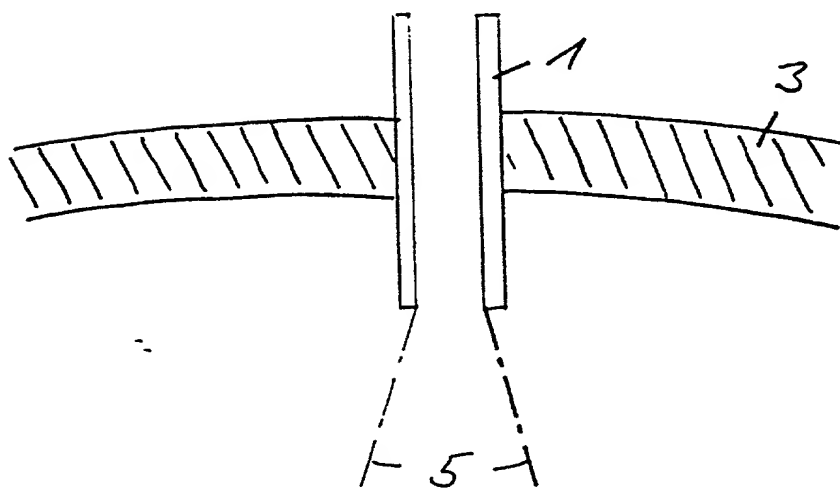
1. Trocar sleeve for endoscopic applications, comprising
 - an elongate part including at least one passage for insertion of an instrument such as an endoscope, scissors or the like, and
 - pivotable parts mobile on the distal side,**characterised** in that the distal section is formed by several longitudinal sections (11, 12, ...) articulated on the proximal section (2) of the trocar sleeve, and that a mechanism is provided for pivoting the individual longitudinal sections (11, 12, ...) about an axis orthogonal on the longitudinal axis of the trocar sleeve.
2. Trocar sleeve according to Claim 1 or the introductory clause of Claim 1, **characterised** in that said longitudinal sections (11, 12, ...) constituting the distal section of the trocar sleeve are adapted to be tilted forward in such a way that they form a tip which permits the piercing of the body wall (3) even without an additional trocar mandrel.
3. Trocar sleeve according to Claim 1 or 2, **characterised** in that upon insertion of the trocar sleeve (1) into a body cavity said longitudinal sections (11, 12, ...) can be tilted outward in a direction toward the proximal end.
4. Trocar sleeve according to Claim 1, **characterised** in that said longitudinal sections (11, 12, ...) are adapted to bear against the internal wall (3) of the body cavity into which the trocar sleeve is inserted.
5. Trocar sleeve according to any of the Claims 1 to 4, **characterised** in that said longitudinal sections (11, 12, ...) are configured in the manner of wings.

6. Trocar sleeve according to any of the Claims 1 to 5,
characterised in that the mechanism comprises spring elements acting upon the individual longitudinal sections to bias them in a direction towards the proximal end.
7. Trocar sleeve according to any of the Claims 1 to 6,
characterised in that a flange (4) is provided on the proximal end of the trocar sleeve (1), by which the trocar sleeve (1) bears against the outer wall of the body cavity (3).
8. Trocar sleeve according to Claim 7,
characterised in that said flange (4) is adjustable in a direction toward the longitudinal axis of the trocar (1).

ABSTRACT

What is described here is a trocar sleeve for endoscopic applications, comprising an elongate part including at least one passage for insertion of an instrument such as an endoscopic, scissors or the like, and pivotable parts mobile on the distal end. The inventive trocar sleeve is characterized by the provision that the distal section is formed by several longitudinal sections articulated on the proximal section of the trocar sleeve, and that a mechanism is provided for pivoting the individual longitudinal sections about an axis orthogonal on the longitudinal axis of the trocar sleeve.

1/1

Fig. 1Fig. 2

Declaration and Power of Attorney for Patent Application

Déclaration et Pouvoirs pour Demande de Brevet

French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée.

Trocar Sleeve For Endoscopic Applications

et dont la description est fournie ci-joint à moins que la case suivante n'ait été cochée:

☐ a été déposée le _____ sous le numéro de demande des Etats-Unis ou le numéro de demande international PCT _____ et modifiée le _____ (le cas échéant).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci dessus.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Trocar Sleeve For Endoscopic Applications

the specification of which is attached hereto unless the following box is checked:

☐ was filed on _____ as United States Application Number _____ or PCT International Application Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

[Page 1 of 3]

Burden Hour Statement: This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORM TO THIS ADDRESS. SEND TO: Commissioner of Patents and Trademarks, Washington, DC 20231.

French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

Prior Foreign Applications
(Frühere ausländische Anmeldungen)

DE 196 29 537.8-35

Germany

(Number)
(Numéro)

(Country)
(Pays)

(Number)
(Numéro)

(Country)
(Pays)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

(Application No.)
(N° de demande)

(Filing Date)
(Date de dépôt)

(Application No.)
(N° de demande)

(Filing Date)
(Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35 § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 de Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande:

(Application No.)
(N° de demande)

(Filing Date)
(Date de dépôt)

(Application No.)
(N° de demande)

(Filing Date)
(Date de dépôt)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toute ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed
Droit de priorité revendiqué

22 July 1996

(Day/Month/Year Filed)
(Jour/Mois/Année de dépôt)

☐

(Day/Month/Year Filed)
(Jour/Mois/Année de dépôt)

☐

I hereby claim the benefit under Title 35, United States Code, § 119 (e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States of PCT International application is not disclosed in the prior United States of PCT International Application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Status) (patented, pending, abandoned)
(Statut) (breveté, en cours d'examen, abandonné)

(Status) (patented, pending, abandoned)
(Statut) (breveté, en cours d'examen, abandonné)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

French Language Declaration

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec l'Office des brevets et des marques: (*mentionner le nom et le numéro d'enregistrement.*)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the patent and Trademark Office connected therewith: (*list name and registration number*)

William J. Speranza, Registration No. 26,340
Wesley W. Whitmyer, Jr., Registration No. 33,558

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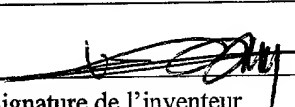
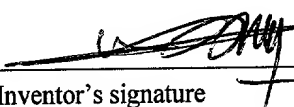
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Nom complet du second co-inventeur, le cas échéant	Full name of second joint inventor, if any
Signature du second inventeur Date	Second Inventor's signature Date
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Nationalité	Citizenship
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(Fournir les même renseignements et la signature de tout co-inventeur supplémentaire.)

(Supply similar information and signature for third and subsequent joint inventors.)